SODIUM ZIRCONIUM CYCLOSILICATE FOR THE TREATMENT OF PERSISTENT HYPERKALAEMIA IN PREVALENT HAEMODIALYSIS PATIENTS: EXPERIENCE FROM CLINICAL PRACTICE

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Background and Aims: Sodium zirconium cyclosilicate (SZC) (Lokelma®) is a new oral potassium binder. In September 2019 the UK National Institute for Health and Care Excellence (NICE) did not recommend SZC for dialysis patients due to a lack of evidence. The recent DIALIZE phase 3b randomised controlled trial concluded that SZC is an effective and well-tolerated treatment for hyperkalemia in haemodialysis (HD) patients. We offer an insight into SZC treatment in HD patients with persistent hyperkalaemia in clinical practice.

Method: Adult prevalent HD patients prescribed SZC for persistent hyperkalaemia were included for analysis. The highest pre-dialysis serum potassium (sK^+) values were recorded each month before (M-6 to M-1) and after (M1 to M5) SZC initiation. The primary efficacy measure was a reduction in sK^+ with SZC treatment.

Results: Sixteen patients (mean age 53.5 years, 56.3% male) were included for analysis. 43.8% (n=7) were diabetic. At the time of SZC initiation 43.8% (n=7) received HD via arteriovenous fistula, 12.4% (n=2) via arteriovenous graft and 43.8% (n=7) via tunnelled central venous catheter. The mean Urea Reduction Ratio [SD] was 68.5% [10.8] and the mean [SD] pre-HD bicarbonate was 22.8mmol/L [2.7]. The dialysate potassium prescription was 2mmol/L for 93.8% of patients (n=15) and 1mmol/L for 6.2% of patients (n=1). The mean [SD] achievement of prescribed dialysis hours over the previous 4 weeks was 93.5% [12.2]. 68.8% (n=11) had previous treatment with calcium polystyrene sulfonate and 12.5% (n=2) with patiromer. 18.8% (n=3) were currently prescribed a renin-angiotensin-aldosterone system inhibitor. 93.8% (n=15) had received dietetic advice. SZC starting doses ranged from 5g four times a week on non-dialysis days to 10g three times a day.

Mean [SD] sK^+ at month-1 (M-1) (immediate pre-treatment period) was 7.38mmol/L [0.31]. Mean [SD] sK^+ at month 1 (M1) was 6.37mmol/L [1.21]. The statistical difference between these groups was p=0.0023 (paired two-tailed T-test). Figure 1 includes mean maximum monthly pre-dialysis sK^+ from M-6 to M5.

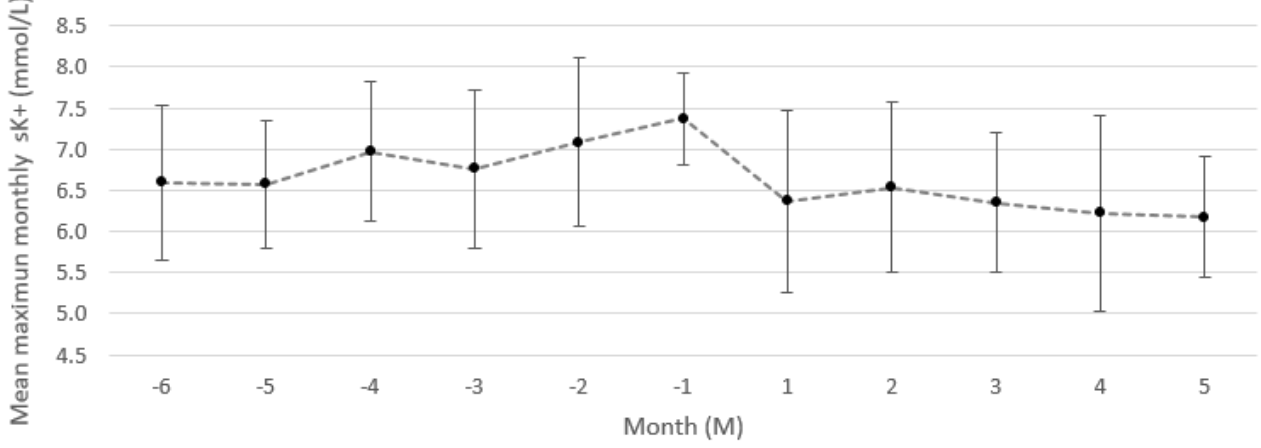
SZC was stopped in two patients (after M1 with sK^+ 5.0mmol/L and after M4 with sK^+ 4.3mmol/L) as it was no longer clinically indicated. Two patients became non-compliant (clinician-suspected or confirmed by patient) with SZC after M2 (sK^+ 6.7mmol/L and sK^+ 6.4mmol/L). Subsequent sK^+ values would not reflect treatment with SZC in these patients. Figure 2 includes mean maximum monthly sK^+ for the 12 patients on SZC from M-3 to M5.

ANOVA and post-hoc Dunnett's tests were undertaken to compare SZC treatment months (M1, 2, 3, 4 and 5) to the immediate pre-treatment period (M-1). ANOVA was close to significance (p=0.058), with post-hoc corrected for multiple comparisons finding the data to be significant for M1 vs. M-1 (p=0.045) and M5 vs. M-1 (p=0.018). The same tests across M1 through M5 revealed no significant difference (p=0.968 ANOVA and p=0.555 Dunnett's), demonstrating that continued treatment with SZC to M5 did not result in a further decline in sK^+.

Conclusion: Sodium zirconium cyclosilicate is effective in reducing pre-dialysis sK^+ in patients with moderate and severe hyperkalaemia undergoing haemodialysis in clinical practice.

Figures:

Figure 1. Mean pre-dialysis sK+ without and with SZC treatment (n=variable patient number)



n	14	15	15	16	16	16	16	15	13	13	12

Figure 2. Mean pre-dialysis sK+ without and with SZC treatment (n=12)